

## **REMARKS AND DISCUSSION:**

Upon entry of the present Amendment-D, claims 1-20 are pending, of which, claims 1, 5 and 6 are independent. Paragraph [0025] of the specification and claims 1, 5 and 6 have been amended by the present Amendment-D. No claims have been canceled or added by the present Amendment-D.

### **Response to Office Action**

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment-D is submitted.

It is respectfully submitted that by the present Amendment-D, all bases of objection rejection set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

### **Amendments Presented:**

***In the Claims:*** Claims 1, 5 and 6 have been amended to further present distinguishing and defining features of the present invention, i.e., that the internal side faces cause the light emitted from the light-emitting face to be concentrated outwardly of the light guide into a line shape having an area less than that of the light-emitting face, and focusing positions of lights reflected by the two internal side faces are spaced away from the light-emitting surface outwardly of the light guide.

Claim 1 has also been amended to recite that the two internal side surfaces are oval arc curves or paraboloid curves , to overcome the Examiner's objection based on antecedent basis.

***In the Specification:*** Paragraph [0025] of the present application has been amended to provide express antecedent support for the amendment to claims 1, 5 and 6.

Applicant respectfully submits that the above amendments including new claims are fully supported by the original disclosure including drawings. See especially paragraphs [0024], [0025] and Figure 1 of the present application which show that the internal side faces cause the light emitted from the light-emitting face to be concentrated outwardly of the light guide into a line shape having an area less than that of the light-emitting face, and focusing positions of lights reflected by the two internal side faces are spaced away from the light-emitting surface outwardly of the light guide. Applicant also respectfully submits that no new matter is introduced into the application by amending the claims and by adding the new claims since the entire subject matter thereof was expressly or inherently disclosed in the original claims, specification and drawings.

#### Claim Objection

At page 2, item 2 of the Office Action, the Examiner has objected to claim 1. The Examiner states that at lines 11-12 of claim 1, "the curved surfaces of the oval arc curves or paraboloid curves" lacks sufficient antecedent basis.

*Applicant's Response:*

Upon careful consideration of the objection and in light of the amendment to claim 1, applicant respectfully submits that the objection is overcome. Based on the foregoing, applicant respectfully requests that the Examiner's objections to the claim language be reconsidered and withdrawn.

Claim Rejections – 35 USC §102

At page 2, item 4 of the Office Action, the Examiner has rejected claims 1-2 and 5-6 under 35 USC 102(b) as being anticipated by Pelka et al. (US 2002/0114168). The Examiner has taken the position that Pelka discloses all of the features of the claimed invention, specifically with regard to Pelka's Figure 17.

*Applicant's Response:*

Upon careful consideration of the Examiner's rejection and in light of the above amendment to independent claims 1, 5 and 6, applicant respectfully traverses such rejection and submits that they patentably distinguish over Pelka because this reference fails to disclose or suggest features required by each of these claims, e.g., that *two internal side surfaces of the guide are oval arc curves or paraboloid curves which have differently shaped areas such that light emitted after being reflected by the two curved surfaces focus at different distances from the curved surfaces, or cause the focusing positions of lights reflected by the two internal surfaces to be different.*

Generally, applicant submits that Pelka discloses a strip lighting apparatus 10 formed with a plurality of LED's 12 attached on one longitudinal end an elongated waveguide 14, wherein the waveguide has a forward illuminating face 16 and a rear reflective face 18 extending in the longitudinal direction of the waveguide, as well as an input side 20 and a reflective side surface 22 at the two longitudinal ends 24/26 of the waveguide. The apparatus is indicated to be useful as a center high mounted brake light (CHMSL), and is also indicated to comprise *non-imaging optics* or a *non-imaging concentrator*. In a majority of Pelka's disclosed embodiments the waveguide 14 includes a curved forward illuminating face 16 and a planar rear reflective face 18, although in the embodiment of Figure 17 (which the Examiner relies on for his rejections) both surfaces 16 and 18 are planar, while upper and lower reflective surfaces 84 are shaped so as to narrow the divergence of the beam exiting from the front face. Also, the upper and lower surfaces 84, 84 are shaped different from each other such that the field of view will not be symmetric about the XZ plane, which Pelka indicates is "... useful for controlling the direction of light emitted from the lighting apparatus 10."

Further, Pelka refers to the following references for design of non-imaging concentrators and tailored reflectors, **D. Jenkins et al., Integral design method for nonimaging concentrators**, *J. Opt. Soc. Am. A*, vol. 13, No. 10, Oct. 1996, pp2106-2116. D. Jenkins et al., **Tailored Reflectors for Illumination**, *Applied Optics*, vol. 35, No. 10, Apr. 1996, pp. 1669-1672.

Again, applicant respectfully submits that Pelka's wave guide does not include or suggest : *two internal side surfaces which are oval arc curves or paraboloid curves having differently shaped areas such that light emitted after being reflected by the two curved surfaces focus at different distances from the curved surfaces, or cause the focusing positions of lights reflected by the two internal surfaces to be different*, as required by each of independent claims 1, 5, 6.

Although the upper and lower surfaces 84, 84 of the waveguide disclosed in Figure 17 of Pelka may be shaped differently, these surfaces are not *oval arc curves or paraboloid curves* which have differently shaped areas *such that light emitted after being reflected by the two curved surfaces focus at different distances from the curved surfaces* as defined in claim 1. Similarly, the surfaces 84, 84 do not have *sectional shapes which are oval arc curves having different focal distances which cause the focusing positions of lights reflected by the two internal surfaces to be different* such as required by claim 5, or the similar limitations of claim 6. Rather, the bottom surface 84 is depicted as substantially planar, while the top surface 84 is disclosed as having a portion with a concave curve and another portion with a convex curve.

With regard to Pelka's Fig. 12, which depicts a non-imaging optical element 70 which may be used as a collimator 46 of his strip lighting apparatus, Pelka discusses that the element 7 may be formed asymmetric with different upper and lower surfaces 72, 72, but in Fig. 12 the focusing positions of the lights reflected by the surfaces 72, 72 (while different) are both at the outer edges of the emission faces 78 or 80 of the element, also contrary to the claimed invention.

The above distinctions are significant, but not surprising given that Pelka's waveguide is designed / intended to achieve a different function than the claimed light guide, i.e., light emitted from the emitting surface of the waveguide of Pelka's strip lighting apparatus (such as a CHMSL ) expands outwardly of the area of the emitting face, whereas conversely the light guide of the present invention emits light from the emitting face thereof in a concentrated line shape having an area less than that of the emitting face so that it can be effectively used to illuminate a document. This distinction is emphasized by the above amendments to the independent claims.

Of course, Pelka's strip lighting apparatus also does not address the problem which is addressed by the presently claimed light guide, e.g., degradation of a read image when the document is raised above the support surface of a cover glass in an imaging device. As disclosed, the claimed invention advantageously overcomes the discussed problem by providing light distribution, via the different focusing positions of the reflected light, that reduces such degradation.

However, in order to expedite the prosecution of the present application and hopefully place the entire application in condition for allowance applicant has amended independent claims 1, 5 and 6 to further distinguish the present invention over the applied references, i.e., by defining that the internal side faces cause the light emitted from the light-emitting face to be concentrated outwardly of the light guide into a line shape having an area less than that of the light-emitting face, and focusing positions of lights reflected by the two internal side faces are

spaced away from the light-emitting surface outwardly of the light guide. Again, applicant submits that Pelka's wave guide is structured contrary to the claimed features.

Based on the foregoing, the rejection of claims 1, 2, 5 and 6 based on Pelka is overcome, and applicant respectfully requests that the rejection be reconsidered and withdrawn.

#### Claim Rejections – 35 USC §103

At page 4, item 10 of the Office Action, the Examiner has rejected claims 1-20 under 35 USC 103 as being unpatentable over Ikeda (US 2001/0035986) and further in view of Pelka. The Examiner has taken the position that it would have been obvious to modify Ikeda's light guide to have internal side reflective faces with different shapes such as the surfaces 84, 84 of Pelka in order to control the direction of light emitted from the light guide.

#### *Applicant's Response:*

Upon careful consideration of the Examiner's rejection and in light of the above amendments to claims 1, 5 and 6, applicant respectfully traverses such rejection and submits that it is overcome because: Ikeda fails to overcome the deficiencies of Pelka relative to the independent claims as discussed above, such that any hypothetical combination based on the actual teachings of the references will fail to achieve or make obvious the present claims; and the Examiner's proposed hypothetical combination of Ikeda's line illuminating device with select features of Pelka's strip lighting apparatus is improperly based on the Examiner's use of impermissible hindsight *guided exclusively by the applicant's own disclosure*, rather than on any

teaching, suggestion or motivation that can be fairly gleaned from the teachings contained within the references themselves, or on any other appropriate rationale under 35 USC 103.

Initially, applicant notes that Ikeda (US 2001/0035986) was issued as a patent on April 24, 2007, and has been assigned US Patent No. 7,209,268. Similar to the light guide disclosed in the present application, Ikeda's light guide is structured and intended to *concentrate light* that is emitted in a line-shape from the light emitting face of the light guide so that it may be used in scanning documents supported on a transparent document reading surface. This is, again, contrary to Pelka's strip lighting apparatus which *expands the lights emitted therefrom* (e.g., such that it can be widely viewed when used as a CHMSL).

Further, although Ikeda addresses the problem of scanned documents having shaded areas when a document surface is raised above a transparent document reading surface, his proposed solution to the problem is entirely different from the present invention, i.e., he provides light sources on both longitudinal ends of the light guide. Ikeda does not disclose or suggest that internal side surfaces of his guide are *oval arc curves or paraboloid curves* which have differently shaped areas *such that light emitted after being reflected by the two curved surfaces focus at different distances from the curved surfaces* as defined in claim 1, nor does he disclose or suggest the similar features of claims 5, 6.

Based on the actual disclosures of the two references, applicant submits that persons skilled in the art would not consider the Examiner's proposed modification to be obvious



because the references provide no motivation for the proposed modification, but actually teach away therefrom. For example, there is no indication that controlling the direction of emitted light in Ikeda's light guide similar to that achieved by the surfaces 84, 84 in Pelka will have any benefit because Ikeda is concentrating emitted light, not expanding the light as in Pelka. Further, there is no indication in either reference that direction of light has anything to do with shaded areas on scanned documents, which is the problem addressed by Ikeda. Still further, Ikeda's use of light sources on the opposite ends of his guide is contrary to Pelka's strip lighting apparatus, which includes a light source on only one end of the waveguide.

Moreover, applicant submits that even the teachings of Ikeda and Pelka were (somehow) combined, any hypothetical combination based on the actual teachings of the references would still fail to make obvious the claimed invention because both references fail to disclose or in any way suggest the claimed features that *a concentrating position of lights reflected by one side face and a concentrating position of lights reflected by the other side face are different from each other, and wherein the curved surfaces of the oval arc curves or paraboloid curves have differently shaped areas such that light emitted after being reflected by the two curved surfaces focus at different distances from the curved surfaces.*

Based on the foregoing, the rejection of claims 1-20 is overcome, and applicant respectfully requests that the rejection be reconsidered and withdrawn.

**CONCLUSION:**

For all of the above mentioned reasons, applicant submits that all of the Examiner's objections and rejections have been overcome, and that each of the pending claims is patentably distinct over the references of record. It is applicant's contention that no possible reading of the references, either singly or in any reasonable combination, can be viewed as teaching applicant's claimed invention. The application is believed to be in condition for allowance and a notice to this effect is earnestly solicited.

If the Examiner remains unpersuaded of the patentability of all of the pending claims, or feels that the prosecution of the present application could be expedited or advanced by a telephone discussion, he is encouraged to call applicant's undersigned representative to resolve any issues remaining in the prosecution of the application.

Favorable reconsideration is respectfully requested.

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Respectfully submitted,



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